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MACHINERY'S DATA SHEETS

REVISED AND RE-ARRANGED IN LIBRARY FORM

No. 3

Taps and Threading Dies

PRICE 25 CENTS

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Publishers of MACHINERY

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MACHINERY'S DATA SHEET SERIES

COMPILED FROM MACHINERY'S MONTHLY DATA SHEETS AND ARRANGED WITH EXPLANATORY NOTES

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In the following pages are compiled a number of concise tables relating to various kinds and types of taps, die hobs, and dies, carefully selected from MACHINERY'S monthly Data Sheets, issued as supplements to the Engineering and Railway editions of MACHINERY since September, 1898. A number of additional tables also are included which are published here for the first time.

In order to enhance the value of the tables, brief explanatory notes have been provided. In these notes a complete list of references is given to articles which have from time to time appeared in MACHINERY, and to matter published in MACHINERY'S Reference Series, giving additional information on the subject. These references will be of considerable value to readers who wish to make a more thorough study of the subject. In a note at the foot of each table, reference is made to the page on which the explanatory note relating to the table appears.

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TAPS AND THREADING DIES

Dimensions of Hand Taps

Dimensions of regular hand taps are given on pages 4 and 5. These tables are based on the general standards adopted by tap manufacturers, and have been worked out with a view of securing uniformity in the various sizes. The dimensions as given apply to taps having a standard number of threads per inch. They can be used, however, for finer pitches as well, although taps for finer pitches than standard may also be made with the dimension *B* shortened in proportion to the pitch. For example, a ¾-inch tap with 10 threads per inch is given in the table with 2 inches length of thread. If this tap is provided with, say, 16 threads per inch, a length of thread of 1½ inch would be sufficient, although ordinarily all taps of the same diameter are made of the same length. The number of flutes in hand taps should be 4 for diameters up to and including 1½ inch, and 6 for larger sizes. Odd numbers of flutes are not ordinarily used. The reason for this is that an even number of flutes permits of measuring the diameter of the taps in all cases with micrometers. Hand taps are not relieved except on the top of the thread of the chamfered portion, but it is advisable to make the tap slightly smaller in diameter toward the shank than it is at the point. In general practice the tap may be made about 0.0015 inch smaller at the shank end of the thread for taps up to ½ inch diameter, and from 0.002 to 0.003 inch smaller at this end than at the point for taps from ½ up to 2 inches in diameter. [MACHINERY, July, 1905, Hand Taps with Standard Threads; October, 1905, Relief of Taps; December, 1905, Proportions of Hand Taps in Sets; January, 1907, Formulas for Determining the Proportions of Taps; June and July, 1907, Remarks on the Making of Hand Taps; August, 1907, Over-size Limits of Taps; January and February, 1909, The Manufacture of Taps.]

Dimensions of Machine Taps

Machine taps, the dimensions for which are given on pages 6 and 7, are used for tapping nuts in tapping machines. The tap consists of a threaded portion *B*, having a straight part *E* at the upper end of the thread, and the remainder of the thread chamfered. The extreme point of the threaded part is provided with a secondary chamfer to facilitate the entering of the tap in the hole in the nut blank. A distance *F* of the chamfered portion is threaded with a taper in the root of the thread. Machine taps are relieved in the angle as well as on the top of the thread for the whole of the chamfered portion. The straight portion is not relieved either in the angle of the thread or on the top. [MACHINERY, February, 1907, Machine Taps.]

Dimensions of Tapper Taps

Dimensions of tapper taps are given on page 8. The tapper tap is used for tapping nuts in tapping machines, the same as the machine tap, but it is not adapted to the same hard usage as would be a machine tap, and is much more simply and cheaply made. The threaded portion *A* of the tap is chamfered on the top of the thread for a distance *C*, while the part *B* is straight. These taps, as a rule, are relieved only on the top of the thread of the chamfered portion, and are not given any relief in the angle of the thread. The straight part which performs no cutting, but merely acts as the sizing part of the tap, should not be relieved. The practice adhered to by prominent tool manufacturers is to give four flutes to

(Continued on page 16.)

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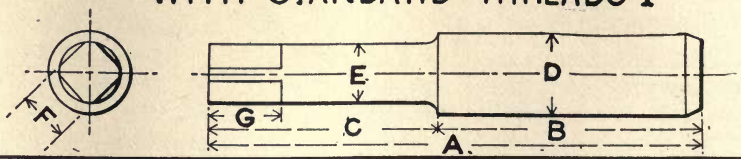
DIMENSIONS OF HAND TAPS WITH STANDARD THREADS-I



Diameter of Tap	Number of Threads per Inch		Total Length	Length of Thread	Length of Shank	Diameter of Shank E		Size of Square	Length of Square
D	U.S.St'd	V.St'd	A	B	C	U.S.St'd	V.St'd	F	G
3/16	32	24	2 1/4	7/8	1 3/8	3/16	3/16	9/64	3/16
1/4	20	20	2 1/2	1	1 1/2	1/4	1/4	3/16	1/4
5/16	18	18	2 11/16	1 1/8	1 9/16	0.23	0.21	5/32	5/16
3/8	16	16	2 15/16	1 1/4	1 11/16	0.28	0.25	3/16	3/8
7/16	14	14	3 1/8	1 3/8	1 3/4	0.33	0.30	1/4	3/8
1/2	13	12	3 3/8	1 1/2	1 7/8	0.39	0.34	9/32	7/16
9/16	12	12	3 9/16	1 5/8	1 15/16	0.44	0.40	5/16	1/2
5/8	11	11	3 13/16	1 3/4	2 1/16	0.49	0.45	11/32	9/16
11/16	11	11	4	1 7/8	2 1/8	0.56	0.52	13/32	9/16
3/4	10	10	4 1/4	2	2 1/4	0.61	0.56	7/16	5/8
13/16	10	10	4 7/16	2 1/8	2 5/16	0.67	0.62	1/2	11/16
7/8	9	9	4 11/16	2 1/4	2 7/16	0.72	0.67	1/2	3/4
15/16	9	9	4 7/8	2 3/8	2 1/2	0.78	0.73	9/16	3/4
1	8	8	5 1/8	2 1/2	2 5/8	0.82	0.77	5/8	13/16
1 1/16	7	8	5 1/4	2 9/16	2 11/16	0.86	0.83	5/8	7/8
1 1/8	7	7	5 7/16	2 5/8	2 13/16	0.92	0.86	11/16	7/8
1 3/16	7	7	5 9/16	2 11/16	2 7/8	0.98	0.92	11/16	7/8

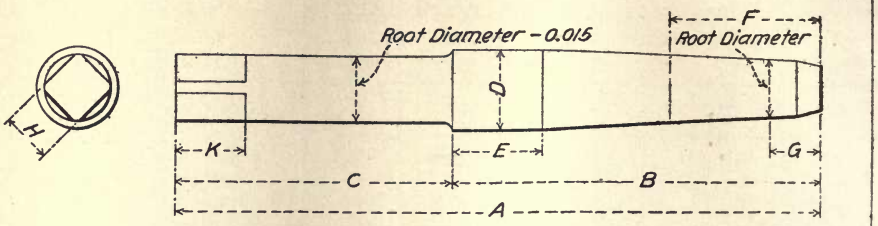
DIMENSIONS OF HAND TAPS—II

DIMENSIONS OF HAND TAPS WITH STANDARD THREADS - II

Diameter of Tap	Number of Threads per Inch		Total Length	Length of Thread	Length of Shank	Diameter of Shank E		Size of Square	Length of Square
D	U.S.St'd	V.St'd	A	B	C	U.S.St'd	V.St'd	F	G
1 1/4	7	7	5 11/16	2 3/4	2 15/16	1.04	0.98	3/4	15/16
1 5/16	6	7	5 13/16	2 13/16	3	1.08	1.05	13/16	15/16
1 3/8	6	6	6	2 7/8	3 1/8	1.14	1.07	13/16	15/16
1 7/16	6	6	6 1/8	2 15/16	3 3/16	1.20	1.13	7/8	1
1 1/2	6	6	6 1/4	3	3 1/4	1.26	1.19	15/16	1
1 5/8	5 1/2	5	6 9/16	3 1/8	3 7/16	1.37	1.26	1	1 1/16
1 3/4	5	5	6 13/16	3 1/4	3 9/16	1.47	1.38	1 1/16	1 1/16
1 7/8	5	4 1/2	7 1/8	3 3/8	3 3/4	1.59	1.46	1 1/8	1 1/8
2	4 1/2	4 1/2	7 3/8	3 1/2	3 7/8	1.69	1.59	1 1/4	1 3/16
2 1/8	4 1/2	4 1/2	7 11/16	3 5/8	4 1/16	1.81	1.71	1 5/16	1 3/16
2 1/4	4 1/2	4 1/2	7 15/16	3 3/4	4 3/16	1.94	1.84	1 7/16	1 1/4
2 3/8	4	4 1/2	8 1/4	3 7/8	4 3/8	2.03	1.97	1 1/2	1 5/16
2 1/2	4	4	8 1/2	4	4 1/2	2.15	2.04	1 9/16	1 5/16
2 5/8	4	4	8 13/16	4 1/8	4 11/16	2.28	2.17	1 11/16	1 3/8
2 3/4	4	4	9 1/16	4 1/4	4 13/16	2.40	2.29	1 3/4	1 7/16
2 7/8	3 1/2	4	9 3/8	4 3/8	5	2.48	2.42	1 13/16	1 7/16
3	3 1/2	3 1/2	9 5/8	4 1/2	5 1/8	2.60	2.48	1 7/8	1 1/2
3 1/4	3 1/2	3 1/2	10 3/16	4 3/4	5 7/16	2.85	2.73	2 1/16	1 9/16
3 1/2	3 1/4	3 1/4	10 3/4	5	5 3/4	3.08	2.95	2 1/4	1 11/16
3 3/4	3	3	11 5/16	5 1/4	6 1/16	3.29	3.15	2 7/16	1 3/4
4	3	3	11 7/8	5 1/2	6 3/8	3.54	3.39	2 5/8	1 13/16

DIMENSIONS OF MACHINE TAPS—I

Machine Taps - I.



Diameter of Tap	Total Length	Length of Thread	Length of Shank	Length of Full Thread	Length of Taper in Angle	Length Below Root Diameter	Size of Square	Length of Square	Number of Flutes
D	A	B	C	E	F	G	H	K	
1/4	5 5/16	1 7/8	3 7/16	3/8	7/16	3/16	1/8	5/8	4
5/16	5 5/8	2	3 5/8	7/16	1/2	7/32	5/32	5/8	4
3/8	6 1/16	2 3/16	3 7/8	1/2	9/16	1/4	3/16	11/16	5
7/16	6 3/8	2 5/16	4 1/16	1/2	9/16	1/4	1/4	3/4	5
1/2	6 3/4	2 1/2	4 1/4	9/16	5/8	5/16	9/32	3/4	5
9/16	7 1/16	2 5/8	4 7/16	5/8	11/16	5/16	5/16	13/16	5
5/8	7 1/2	2 13/16	4 11/16	11/16	3/4	5/16	11/32	7/8	5
11/16	7 13/16	2 15/16	4 7/8	11/16	3/4	3/8	13/32	7/8	5
3/4	8 3/16	3 1/8	5 1/16	3/4	13/16	3/8	7/16	15/16	5
13/16	8 1/2	3 1/4	5 1/4	13/16	7/8	3/8	1/2	1	5
7/8	8 15/16	3 7/16	5 1/2	7/8	15/16	7/16	1/2	1	5
15/16	9 1/4	3 9/16	5 11/16	7/8	15/16	7/16	9/16	1 1/16	5
1	9 5/8	3 3/4	5 7/8	15/16	1	7/16	5/8	1 1/8	5
1 1/8	10 3/8	4 1/16	6 5/16	1 1/16	1 1/8	1/2	11/16	1 3/16	5
1 1/4	11 1/16	4 3/8	6 11/16	1 1/8	1 3/16	9/16	3/4	1 1/4	5

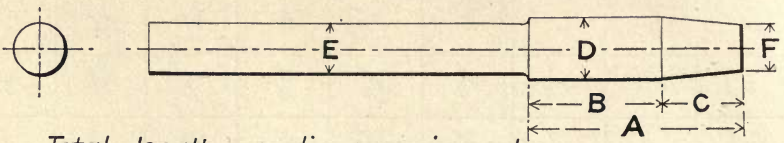
DIMENSIONS OF MACHINE TAPS—II

Machine Taps – II									
Diameter of Tap	Total Length	Length of Thread	Length of Shank	Length of Full Thread	Length of Taper in Angle	Length Below Root Diameter	Size of Square	Length of Square	Number of Flutes
D	A	B	C	E	F	G	H	K	
1 3/8	11 13/16	4 11/16	7 1/8	1 1/4	1 5/16	9/16	13/16	1 3/8	5
1 1/2	12 1/2	5	7 1/2	1 5/16	1 3/8	5/8	15/16	1 7/16	5
1 5/8	13 1/4	5 5/16	7 15/16	1 7/16	1 1/2	11/16	1	1 1/2	5
1 3/4	13 15/16	5 5/8	8 5/16	1 1/2	1 9/16	11/16	1 1/16	1 5/8	5
1 7/8	14 11/16	5 15/16	8 3/4	1 5/8	1 11/16	3/4	1 1/8	1 11/16	5
2	15 3/8	6 1/4	9 1/8	1 11/16	1 3/4	3/4	1 1/4	1 3/4	5
2 1/8	15 3/4	6 7/16	9 5/16	1 3/4	1 13/16	3/4	1 5/16	1 3/4	5
2 1/4	16 1/8	6 5/8	9 1/2	1 13/16	1 7/8	13/16	1 7/16	1 3/4	6
2 3/8	16 1/2	6 13/16	9 11/16	1 13/16	1 15/16	13/16	1 1/2	1 13/16	6
2 1/2	16 7/8	7	9 7/8	1 7/8	2	7/8	1 9/16	1 13/16	6
2 5/8	17 1/4	7 3/16	10 1/16	1 15/16	2 1/16	7/8	1 11/16	1 13/16	6
2 3/4	17 5/8	7 3/8	10 1/4	2	2 1/8	7/8	1 3/4	1 13/16	6
2 7/8	18	7 9/16	10 7/16	2	2 3/16	15/16	1 13/16	1 7/8	6
3	18 3/8	7 3/4	10 5/8	2 1/16	2 1/4	15/16	1 7/8	1 7/8	6
3 1/4	19 1/8	8 1/8	11	2 3/16	2 3/8	1	2 1/16	1 7/8	7
3 1/2	19 7/8	8 1/2	11 3/8	2 1/4	2 1/2	1 1/16	2 1/4	1 15/16	7
3 3/4	20 5/8	8 7/8	11 3/4	2 3/8	2 5/8	1 1/16	2 7/16	1 15/16	7
4	21 3/8	9 1/4	12 1/8	2 7/16	2 3/4	1 1/8	2 5/8	2	7

Contributed by Erik Oberg, MACHINERY'S Data Sheet No. 98. Explanatory note: Page 3.

DIMENSIONS OF TAPPER TAPS

DIMENSIONS OF TAPPER TAPS WITH STANDARD THREADS

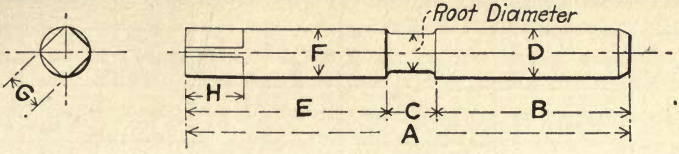


Total length according to requirements

Diameter of Tap	Number of Threads per Inch		Length of Thread	Length of Straight Part	Length of Chamfered Part	Diameter of Shank E		Diameter of Point F	
D	U.S. St'd	V. St'd	A	B	C	U.S. St'd	V. St'd	U.S. St'd	V. St'd
3/16	32	24	1 3/16	3/4	7/16	0.14	0.11	0.140	0.110
1/4	20	20	1 7/16	7/8	9/16	0.17	0.15	0.179	0.157
5/16	18	18	1 3/4	1 1/16	11/16	0.23	0.21	0.234	0.210
3/8	16	16	2	1 1/4	3/4	0.28	0.25	0.287	0.260
7/16	14	14	2 5/16	1 7/16	7/8	0.33	0.30	0.338	0.306
1/2	13	12	2 9/16	1 9/16	1	0.39	0.34	0.393	0.349
9/16	12	12	2 7/8	1 3/4	1 1/8	0.44	0.40	0.446	0.410
5/8	11	11	3	1 13/16	1 3/16	0.49	0.45	0.499	0.460
11/16	11	11	3 1/8	1 7/8	1 1/4	0.56	0.52	0.561	0.522
3/4	10	10	3 1/4	1 15/16	1 5/16	0.61	0.56	0.611	0.568
13/16	10	10	3 3/8	2	1 3/8	0.67	0.62	0.673	0.630
7/8	9	9	3 1/2	2 1/8	1 3/8	0.72	0.67	0.722	0.674
15/16	9	9	3 5/8	2 3/16	1 7/16	0.78	0.73	0.783	0.735
1	8	8	3 3/4	2 1/4	1 1/2	0.82	0.77	0.828	0.774
1 1/8	7	7	4	2 7/16	1 9/16	0.92	0.86	0.928	0.867
1 1/4	7	7	4 1/4	2 9/16	1 11/16	1.04	0.98	1.053	0.992
1 3/8	6	6	4 1/2	2 3/4	1 3/4	1.14	1.07	1.147	1.074
1 1/2	6	6	4 3/4	2 7/8	1 7/8	1.26	1.19	1.272	1.199
1 5/8	5 1/2	5	5	3 1/16	1 15/16	1.37	1.26	1.376	1.266
1 3/4	5	5	5 1/4	3 3/16	2 1/16	1.47	1.38	1.476	1.390
1 7/8	5	4 1/2	5 1/2	3 3/8	2 1/8	1.59	1.46	1.601	1.476
2	4 1/2	4 1/2	5 3/4	3 1/2	2 1/4	1.69	1.59	1.696	1.600

DIMENSIONS OF OLD STANDARD MACHINE SCREW TAPS

DIMENSIONS OF MACHINE SCREW TAPS



Number of Tap	Diameter of Tap	Standard Number of Threads	Total Length	Length of Thread	Length of Neck	Length of Shank	Diameter of Shank	Size of Square	Length of Square
	D		A	B	C	E	F	G	H
1	0.071	64	$1\frac{5}{8}$	$\frac{9}{16}$	—	$1\frac{1}{16}$	0.125	$\frac{3}{32}$	$\frac{3}{16}$
$1\frac{1}{2}$	0.081	56	$1\frac{11}{16}$	$\frac{5}{8}$	—	$1\frac{1}{16}$	0.125	$\frac{3}{32}$	$\frac{3}{16}$
2	0.089	56	$1\frac{3}{4}$	$\frac{5}{8}$	—	$1\frac{1}{8}$	0.125	$\frac{3}{32}$	$\frac{3}{16}$
3	0.101	48	$1\frac{13}{16}$	$\frac{11}{16}$	—	$1\frac{1}{8}$	0.125	$\frac{3}{32}$	$\frac{3}{16}$
4	0.113	36	$1\frac{7}{8}$	$\frac{11}{16}$	—	$1\frac{3}{16}$	0.125	$\frac{3}{32}$	$\frac{3}{16}$
5	0.125	36	$1\frac{15}{16}$	$\frac{3}{4}$	—	$1\frac{3}{16}$	0.125	$\frac{3}{32}$	$\frac{7}{32}$
6	0.141	32	2	$\frac{13}{16}$	—	$1\frac{3}{16}$	0.141	$\frac{7}{64}$	$\frac{7}{32}$
7	0.154	32	$2\frac{1}{16}$	$\frac{13}{16}$	—	$1\frac{1}{4}$	0.154	$\frac{7}{64}$	$\frac{7}{32}$
8	0.166	32	$2\frac{1}{8}$	$\frac{7}{8}$	$\frac{1}{8}$	$1\frac{1}{8}$	0.166	$\frac{1}{8}$	$\frac{7}{32}$
9	0.180	30	$2\frac{3}{16}$	$\frac{15}{16}$	$\frac{1}{8}$	$1\frac{1}{8}$	0.180	$\frac{1}{8}$	$\frac{1}{4}$
10	0.194	24	$2\frac{1}{4}$	$\frac{15}{16}$	$\frac{5}{32}$	$1\frac{5}{32}$	0.194	$\frac{5}{32}$	$\frac{1}{4}$
11	0.206	24	$2\frac{5}{16}$	1	$\frac{5}{32}$	$1\frac{5}{32}$	0.206	$\frac{5}{32}$	$\frac{1}{4}$
12	0.221	24	$2\frac{7}{16}$	$1\frac{1}{16}$	$\frac{5}{32}$	$1\frac{7}{32}$	0.221	$\frac{5}{32}$	$\frac{9}{32}$
13	0.234	22	$2\frac{1}{2}$	$1\frac{1}{16}$	$\frac{3}{16}$	$1\frac{1}{4}$	0.234	$\frac{3}{16}$	$\frac{9}{32}$
14	0.246	20	$2\frac{9}{16}$	$1\frac{1}{8}$	$\frac{3}{16}$	$1\frac{1}{4}$	0.246	$\frac{3}{16}$	$\frac{9}{32}$
15	0.261	20	$2\frac{5}{8}$	$1\frac{3}{16}$	$\frac{3}{16}$	$1\frac{1}{4}$	0.261	$\frac{3}{16}$	$\frac{5}{16}$
16	0.272	18	$2\frac{11}{16}$	$1\frac{3}{16}$	$\frac{7}{32}$	$1\frac{9}{32}$	0.272	$\frac{7}{32}$	$\frac{5}{16}$
18	0.298	18	$2\frac{13}{16}$	$1\frac{1}{4}$	$\frac{7}{32}$	$1\frac{11}{32}$	0.298	$\frac{7}{32}$	$\frac{5}{16}$
20	0.325	16	$2\frac{15}{16}$	$1\frac{3}{8}$	$\frac{7}{32}$	$1\frac{11}{32}$	0.325	$\frac{1}{4}$	$\frac{11}{32}$
22	0.350	16	$3\frac{1}{16}$	$1\frac{7}{16}$	$\frac{1}{4}$	$1\frac{3}{8}$	0.350	$\frac{1}{4}$	$\frac{11}{32}$
24	0.378	16	$3\frac{3}{16}$	$1\frac{1}{2}$	$\frac{9}{32}$	$1\frac{13}{32}$	0.378	$\frac{9}{32}$	$\frac{3}{8}$
26	0.404	16	$3\frac{5}{16}$	$1\frac{9}{16}$	$\frac{5}{16}$	$1\frac{7}{16}$	0.404	$\frac{5}{16}$	$\frac{3}{8}$
28	0.430	14	$3\frac{7}{16}$	$1\frac{11}{16}$	$\frac{5}{16}$	$1\frac{7}{16}$	0.430	$\frac{5}{16}$	$\frac{13}{32}$
30	0.456	14	$3\frac{9}{16}$	$1\frac{3}{4}$	$\frac{5}{16}$	$1\frac{1}{2}$	0.456	$\frac{11}{32}$	$\frac{7}{16}$

MACHINERY, N.Y.

MACHINERY's Data Sheet No. 65. Explanatory note: Page 16.

A. S. M. E. STANDARD MACHINE SCREW TAPS

Old	New	Outside Diameters			Pitch Diameters			Root Diameters			Tap Drill Diameters
No.	Out. Diam. and Thrds. per Inch	Minimum	Maximum	Difference	Minimum	Maximum	Difference	Minimum	Maximum	Difference	
0	0.060-80	0.0609	0.0632	0.0023	0.0528	0.0538	0.0010	0.0447	0.0466	0.0019	0.0465
1	0.073-72	0.0740	0.0765	0.0025	0.0650	0.0660	0.0010	0.0560	0.0580	0.0020	0.0595
2	0.086-64	0.0871	0.0898	0.0027	0.0770	0.0781	0.0011	0.0668	0.0689	0.0021	0.0700
3	0.099-56	0.1002	0.1033	0.0031	0.0886	0.0897	0.0011	0.0770	0.0793	0.0023	0.0785
4	0.112-48	0.1133	0.1168	0.0035	0.0998	0.1010	0.0012	0.0852	0.0887	0.0025	0.0890
5	0.125-44	0.1263	0.1301	0.0038	0.1116	0.1129	0.0013	0.0968	0.0995	0.0027	0.0995
6	0.138-40	0.1394	0.1435	0.0041	0.1232	0.1246	0.0014	0.1069	0.1097	0.0028	0.1100
7	0.151-36	0.1525	0.1569	0.0044	0.1345	0.1359	0.0014	0.1164	0.1193	0.0029	0.1200
8	0.164-36	0.1655	0.1699	0.0044	0.1475	0.1489	0.0014	0.1294	0.1323	0.0029	0.1360
9	0.177-32	0.1786	0.1835	0.0049	0.1583	0.1598	0.0015	0.1380	0.1411	0.0031	0.1405
10	0.190-30	0.1916	0.1968	0.0052	0.1700	0.1716	0.0016	0.1483	0.1515	0.0032	0.1520
12	0.216-28	0.2176	0.2232	0.0056	0.1944	0.1961	0.0017	0.1712	0.1745	0.0033	0.1730
14	0.242-24	0.2438	0.2500	0.0062	0.2167	0.2184	0.0017	0.1896	0.1931	0.0035	0.1935
16	0.268-22	0.2698	0.2765	0.0067	0.2403	0.2421	0.0018	0.2108	0.2144	0.0036	0.2130
18	0.294-20	0.2959	0.3031	0.0072	0.2634	0.2652	0.0018	0.2309	0.2346	0.0037	0.2340
20	0.320-20	0.3219	0.3291	0.0072	0.2894	0.2912	0.0018	0.2569	0.2606	0.0037	0.2610
22	0.346-18	0.3479	0.3559	0.0080	0.3118	0.3138	0.0020	0.2757	0.2796	0.0039	0.2810
24	0.372-16	0.3740	0.3828	0.0088	0.3334	0.3354	0.0020	0.2928	0.2968	0.0040	0.2968
26	0.398-16	0.4000	0.4088	0.0088	0.3594	0.3614	0.0020	0.3188	0.3228	0.0040	0.3230
28	0.424-14	0.4261	0.4359	0.0098	0.3797	0.3818	0.0021	0.3333	0.3374	0.0041	0.3390
30	0.450-14	0.4521	0.4619	0.0098	0.4057	0.4078	0.0021	0.3593	0.3634	0.0041	0.3680

Standard approved by the A. S. M. E., May, 1907, MACHINERY'S Data Sheet No. 82.
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A. S. M. E. SPECIAL MACHINE SCREW TAPS

Old	New	Outside Diameters			Pitch Diameters			Root Diameters			Tap Drill
No.	Out. Diam. and Thds. per Inch	Minimum	Maximum	Difference	Minimum	Maximum	Difference	Minimum	Maximum	Difference	Diameters
1	0.073–64	0.0741	0.0768	0.0027	0.0640	0.0651	0.0011	0.0538	0.0559	0.0021	0.0550
2	0.086–56	0.0872	0.0903	0.0031	0.0756	0.0767	0.0011	0.0640	0.0663	0.0023	0.0670
3	0.099–48	0.1003	0.1038	0.0035	0.0868	0.0880	0.0012	0.0732	0.0757	0.0025	0.0760
4	0.112–40	0.1134	0.1175	0.0041	0.0972	0.0986	0.0014	0.0809	0.0837	0.0028	0.0820
	36	0.1135	0.1179	0.0044	0.0955	0.0969	0.0014	0.0774	0.0803	0.0029	0.0810
5	0.125–40	0.1264	0.1305	0.0041	0.1102	0.1116	0.0014	0.0939	0.0967	0.0028	0.0980
	36	0.1265	0.1309	0.0044	0.1085	0.1099	0.0014	0.0904	0.0933	0.0029	0.0935
6	0.138–36	0.1395	0.1439	0.0044	0.1215	0.1229	0.0014	0.1034	0.1063	0.0029	0.1065
	32	0.1396	0.1445	0.0049	0.1193	0.1208	0.0015	0.0990	0.1021	0.0031	0.1015
7	0.151–32	0.1526	0.1575	0.0049	0.1323	0.1338	0.0015	0.1120	0.1151	0.0031	0.1160
	30	0.1526	0.1578	0.0052	0.1310	0.1326	0.0016	0.1093	0.1125	0.0032	0.1130
8	0.164–32	0.1656	0.1705	0.0049	0.1453	0.1468	0.0015	0.1250	0.1281	0.0031	0.1285
	30	0.1656	0.1708	0.0052	0.1440	0.1456	0.0016	0.1223	0.1255	0.0032	0.1285
9	0.177–30	0.1786	0.1838	0.0052	0.1569	0.1585	0.0016	0.1353	0.1385	0.0032	0.1405
	24	0.1788	0.1850	0.0062	0.1517	0.1534	0.0017	0.1247	0.1282	0.0035	0.1285
10	0.190–32	0.1916	0.1965	0.0049	0.1713	0.1728	0.0015	0.1510	0.1541	0.0031	0.1540
	24	0.1918	0.1980	0.0062	0.1647	0.1664	0.0017	0.1377	0.1412	0.0035	0.1405
12	0.216–24	0.2178	0.2240	0.0062	0.1907	0.1924	0.0017	0.1637	0.1672	0.0035	0.1660
14	0.242–20	0.2439	0.2511	0.0072	0.2114	0.2132	0.0018	0.1789	0.1826	0.0037	0.1820
16	0.268–20	0.2699	0.2771	0.0072	0.2374	0.2392	0.0018	0.2049	0.2086	0.0037	0.2090
18	0.294–18	0.2959	0.3039	0.0080	0.2598	0.2618	0.0020	0.2237	0.2276	0.0039	0.2280
20	0.320–18	0.3219	0.3299	0.0080	0.2858	0.2878	0.0020	0.2497	0.2536	0.0039	0.2570
22	0.346–16	0.3480	0.3568	0.0088	0.3074	0.3094	0.0020	0.2668	0.2708	0.0040	0.2720
24	0.372–18	0.3739	0.3819	0.0080	0.3378	0.3398	0.0020	0.3017	0.3056	0.0039	0.3125
26	0.398–14	0.4001	0.4099	0.0098	0.3537	0.3558	0.0021	0.3073	0.3114	0.0041	0.3125
28	0.424–16	0.4260	0.4348	0.0088	0.3854	0.3874	0.0020	0.3448	0.3488	0.0040	0.3480
30	0.450–16	0.4520	0.4608	0.0088	0.4114	0.4134	0.0020	0.3708	0.3748	0.0040	0.3770

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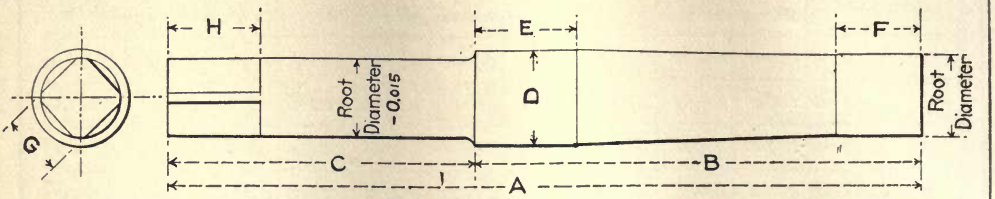
DIMENSIONS OF TAPER DIE TAPS—I

DIMENSIONS OF TAPER DIE TAPS - I



Diameter of Tap	Total Length	Length of Thread	Length of Shank	Length of straight Thread	Length of Pilot	Size of Square	Length of Square	Number of Flutes
D	A	B	C	E	F	G	H	
1/4	5 3/16	2 13/16	2 3/8	1/4	3/8	1/8	9/16	5
5/16	5 1/2	3 1/16	2 7/16	5/16	7/16	5/32	5/8	5
3/8	5 7/8	3 5/16	2 9/16	3/8	1/2	3/16	11/16	5
7/16	6 1/4	3 5/8	2 5/8	7/16	9/16	1/4	11/16	5
1/2	6 5/8	3 7/8	2 3/4	1/2	5/8	9/32	3/4	5
9/16	6 15/16	4 1/8	2 13/16	9/16	5/8	5/16	13/16	5
5/8	7 5/16	4 3/8	2 15/16	5/8	11/16	11/32	13/16	5
11/16	7 11/16	4 11/16	3	11/16	11/16	13/32	7/8	6
3/4	8 1/16	4 15/16	3 1/8	3/4	3/4	7/16	7/8	6
13/16	8 3/8	5 3/16	3 3/16	13/16	3/4	1/2	15/16	6
7/8	8 3/4	5 7/16	3 5/16	7/8	13/16	1/2	1	6
15/16	9 1/8	5 3/4	3 3/8	15/16	13/16	9/16	1	6
1	9 1/2	6	3 1/2	1	7/8	5/8	1 1/16	6
1 1/8	10 3/16	6 1/2	3 11/16	1 1/8	15/16	11/16	1 1/8	6
1 1/4	10 15/16	7 1/16	3 7/8	1 1/4	1	3/4	1 3/16	7

DIMENSIONS OF TAPER DIE TAPS—II

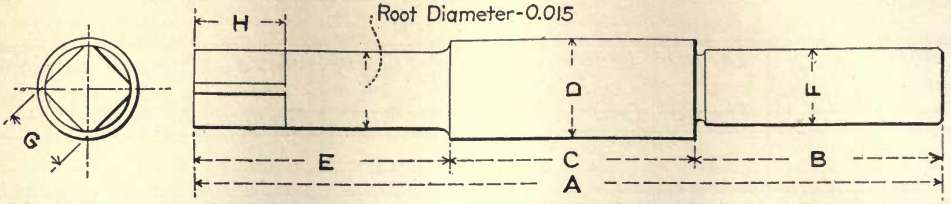
DIMENSIONS OF TAPER DIE TAPS - II

Diameter of Tap	Total Length	Length of Thread	Length of Shank	Length of straight Thread	Length of Pilot	Size of Square	Length of Square	Number of Flutes
D	A	B	C	E	F	G	H	
$1\frac{3}{8}$	$11\frac{5}{8}$	$7\frac{9}{16}$	$4\frac{1}{16}$	$1\frac{3}{8}$	$1\frac{1}{16}$	$\frac{13}{16}$	$1\frac{5}{16}$	7
$1\frac{1}{2}$	$12\frac{3}{8}$	$8\frac{1}{8}$	$4\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{8}$	$\frac{15}{16}$	$1\frac{3}{8}$	7
$1\frac{5}{8}$	$13\frac{1}{16}$	$8\frac{5}{8}$	$4\frac{7}{16}$	$1\frac{5}{8}$	$1\frac{1}{8}$	1	$1\frac{7}{16}$	7
$1\frac{3}{4}$	$13\frac{13}{16}$	$9\frac{3}{16}$	$4\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{3}{16}$	$1\frac{1}{16}$	$1\frac{1}{2}$	8
$1\frac{7}{8}$	$14\frac{1}{2}$	$9\frac{11}{16}$	$4\frac{13}{16}$	$1\frac{7}{8}$	$1\frac{1}{4}$	$1\frac{1}{8}$	$1\frac{5}{8}$	8
2	$15\frac{1}{4}$	$10\frac{1}{4}$	5	2	$1\frac{5}{16}$	$1\frac{1}{4}$	$1\frac{11}{16}$	8
$2\frac{1}{8}$	$15\frac{15}{16}$	$10\frac{3}{4}$	$5\frac{3}{16}$	$2\frac{1}{8}$	$1\frac{5}{16}$	$1\frac{5}{16}$	$1\frac{3}{4}$	8
$2\frac{1}{4}$	$16\frac{11}{16}$	$11\frac{5}{16}$	$5\frac{3}{8}$	$2\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{7}{16}$	$1\frac{13}{16}$	9
$2\frac{3}{8}$	$17\frac{3}{8}$	$11\frac{13}{16}$	$5\frac{9}{16}$	$2\frac{3}{8}$	$1\frac{7}{16}$	$1\frac{1}{2}$	$1\frac{15}{16}$	9
$2\frac{1}{2}$	$18\frac{1}{8}$	$12\frac{3}{8}$	$5\frac{3}{4}$	$2\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{9}{16}$	2	9
$2\frac{5}{8}$	$18\frac{9}{16}$	$12\frac{5}{8}$	$5\frac{15}{16}$	$2\frac{5}{8}$	$1\frac{1}{2}$	$1\frac{11}{16}$	2	9
$2\frac{3}{4}$	19	$12\frac{7}{8}$	$6\frac{1}{8}$	$2\frac{3}{4}$	$1\frac{9}{16}$	$1\frac{3}{4}$	2	10
$2\frac{7}{8}$	$19\frac{7}{16}$	$13\frac{1}{8}$	$6\frac{5}{16}$	$2\frac{7}{8}$	$1\frac{5}{8}$	$1\frac{13}{16}$	$2\frac{1}{16}$	10
3	$19\frac{7}{8}$	$13\frac{3}{8}$	$6\frac{1}{2}$	3	$1\frac{5}{8}$	$1\frac{7}{8}$	$2\frac{1}{16}$	10
$3\frac{1}{4}$	$20\frac{3}{4}$	$13\frac{7}{8}$	$6\frac{7}{8}$	$3\frac{1}{4}$	$1\frac{11}{16}$	$2\frac{1}{16}$	$2\frac{1}{16}$	10
$3\frac{1}{2}$	$21\frac{5}{8}$	$14\frac{3}{8}$	$7\frac{1}{4}$	$3\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{4}$	$2\frac{1}{8}$	10
$3\frac{3}{4}$	$22\frac{1}{2}$	$14\frac{7}{8}$	$7\frac{5}{8}$	$3\frac{3}{4}$	$1\frac{13}{16}$	$2\frac{7}{16}$	$2\frac{1}{8}$	10
4	$23\frac{3}{8}$	$15\frac{3}{8}$	8	4	$1\frac{7}{8}$	$2\frac{5}{8}$	$2\frac{3}{16}$	10

MACHINERY'S Data Sheet No. 67. Explanatory note: Page 16.

DIMENSIONS OF SELLERS HOBS—I

DIMENSIONS OF SELLERS HOBS-I



Diameter of Hob	Total Length	Length of Pilot	Length of Thread	Length of Shank	Diameter of Pilot	Size of Square	Length of Square	Number of Flutes
D	A	B	C	E	F	G	H	
1/4	4 3/4	1 1/4	1 1/4	2 1/4	3/16	1/8	3/4	6
5/16	5	1 3/8	1 3/8	2 1/4	1/4	5/32	3/4	6
3/8	5 3/8	1 9/16	1 9/16	2 1/4	5/16	3/16	3/4	6
7/16	5 11/16	1 11/16	1 11/16	2 5/16	5/16	1/4	13/16	6
1/2	6 1/16	1 7/8	1 7/8	2 5/16	3/8	9/32	13/16	8
9/16	6 5/16	2	2	2 5/16	3/8	5/16	13/16	8
5/8	6 3/4	2 3/16	2 3/16	2 3/8	1/2	11/32	7/8	8
11/16	7	2 5/16	2 5/16	2 3/8	1/2	13/32	7/8	8
3/4	7 3/8	2 1/2	2 1/2	2 3/8	1/2	7/16	7/8	8
13/16	7 11/16	2 5/8	2 5/8	2 7/16	1/2	1/2	15/16	8
7/8	8 1/16	2 13/16	2 13/16	2 7/16	11/16	1/2	15/16	8
15/16	8 3/8	2 15/16	2 15/16	2 1/2	11/16	9/16	1	10
1	8 3/4	3 1/8	3 1/8	2 1/2	11/16	5/8	1	10
1 1/8	9 7/16	3 7/16	3 7/16	2 9/16	7/8	11/16	1 1/16	10
1 1/4	10 1/16	3 3/4	3 3/4	2 9/16	7/8	3/4	1 1/16	10

DIMENSIONS OF SELLERS HOBS—II

DIMENSIONS OF SELLERS HOBS-II

Diameter of Hob	Total Length	Length of Pilot	Length of Thread	Length of Shank	Diameter of Pilot	Size of Square	Length of Square	Number of Flutes
D	A	B	C	E	F	G	H	
$1\frac{3}{8}$	$10\frac{3}{4}$	$4\frac{1}{16}$	$4\frac{1}{16}$	$2\frac{5}{8}$	$1\frac{1}{16}$	$\frac{13}{16}$	$1\frac{1}{8}$	10
$1\frac{1}{2}$	$11\frac{7}{16}$	$4\frac{3}{8}$	$4\frac{3}{8}$	$2\frac{11}{16}$	$1\frac{1}{16}$	$\frac{15}{16}$	$1\frac{3}{16}$	10
$1\frac{5}{8}$	$12\frac{1}{8}$	$4\frac{11}{16}$	$4\frac{11}{16}$	$2\frac{3}{4}$	$1\frac{5}{16}$	1	$1\frac{1}{4}$	12
$1\frac{3}{4}$	$12\frac{3}{4}$	5	5	$2\frac{3}{4}$	$1\frac{5}{16}$	$1\frac{1}{16}$	$1\frac{1}{4}$	12
$1\frac{7}{8}$	$13\frac{7}{16}$	$5\frac{5}{16}$	$5\frac{5}{16}$	$2\frac{13}{16}$	$1\frac{1}{2}$	$1\frac{1}{8}$	$1\frac{5}{16}$	12
2	$14\frac{1}{8}$	$5\frac{5}{8}$	$5\frac{5}{8}$	$2\frac{7}{8}$	$1\frac{1}{2}$	$1\frac{1}{4}$	$1\frac{3}{8}$	12
$2\frac{1}{8}$	$14\frac{9}{16}$	$5\frac{13}{16}$	$5\frac{13}{16}$	$2\frac{15}{16}$	$1\frac{1}{2}$	$1\frac{5}{16}$	$1\frac{7}{16}$	12
$2\frac{1}{4}$	$14\frac{15}{16}$	6	6	$2\frac{15}{16}$	$1\frac{1}{2}$	$1\frac{7}{16}$	$1\frac{7}{16}$	12
$2\frac{3}{8}$	$15\frac{3}{8}$	$6\frac{3}{16}$	$6\frac{3}{16}$	3	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	12
$2\frac{1}{2}$	$15\frac{13}{16}$	$6\frac{3}{8}$	$6\frac{3}{8}$	$3\frac{1}{16}$	$1\frac{1}{2}$	$1\frac{9}{16}$	$1\frac{9}{16}$	12
$2\frac{5}{8}$	$16\frac{1}{4}$	$6\frac{9}{16}$	$6\frac{9}{16}$	$3\frac{1}{8}$	$1\frac{1}{2}$	$1\frac{11}{16}$	$1\frac{5}{8}$	14
$2\frac{3}{4}$	$16\frac{5}{8}$	$6\frac{3}{4}$	$6\frac{3}{4}$	$3\frac{1}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{5}{8}$	14
$2\frac{7}{8}$	$17\frac{1}{16}$	$6\frac{15}{16}$	$6\frac{15}{16}$	$3\frac{3}{16}$	$1\frac{1}{2}$	$1\frac{13}{16}$	$1\frac{11}{16}$	14
3	$17\frac{1}{2}$	$7\frac{1}{8}$	$7\frac{1}{8}$	$3\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{7}{8}$	$1\frac{3}{4}$	14
$3\frac{1}{4}$	$18\frac{5}{16}$	$7\frac{1}{2}$	$7\frac{1}{2}$	$3\frac{5}{16}$	$2\frac{3}{4}$	$2\frac{1}{16}$	$1\frac{13}{16}$	16
$3\frac{1}{2}$	$19\frac{3}{16}$	$7\frac{7}{8}$	$7\frac{7}{8}$	$3\frac{7}{16}$	$2\frac{3}{4}$	$2\frac{1}{4}$	$1\frac{15}{16}$	16
$3\frac{3}{4}$	20	$8\frac{1}{4}$	$8\frac{1}{4}$	$3\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{7}{16}$	2	16
4	$20\frac{7}{8}$	$8\frac{5}{8}$	$8\frac{5}{8}$	$3\frac{5}{8}$	$2\frac{3}{4}$	$2\frac{5}{8}$	$2\frac{1}{8}$	16

all taps up to and including 1½ inch diameter, and 5 flutes for larger sizes. [MACHINERY, December, 1906, Tapper Taps.]

Dimensions of Machine Screw Taps

Dimensions for the old standard machine screw taps, which standard was, up to May, 1907, the only recognized standard for this class of taps, are given on page 9. These taps are provided with 60-degree V-threads, sharp at the bottom of the thread but provided with a considerable flat at the top, there being, however, no standard adopted for the size of this flat, the manufacturers following their own once established gages in this respect. Machine screw taps are usually provided with 3 flutes for sizes smaller than 5/32 inch, and with 4 flutes for larger sizes.

At the May, 1907, meeting of the American Society of Mechanical Engineers a new standard for machine screw taps was approved by this society, and dimensions of taps made according to this standard are given on pages 10 and 11. In this standard the shape of the thread is practically that of the United States standard thread, or a 60-degree thread with a flat at top and bottom. In the tables both maximum and minimum limits are given, so that all data required in making these taps is thus known. The table on page 10 gives the standard machine screw sizes, while that on page 11 gives dimensions for special sizes, all of which, however, are included in the list approved by the American Society of Mechanical Engineers. In each case the nearest corresponding old size is given in the first column for comparison. [MACHINERY, December, 1907, Standard Proportions for Machine Screws.]

Dimensions of Die Taps

Dimensions of taper die taps are given on pages 12 and 13. Taper die taps are used for cutting the thread in dies in a single operation from the blank, and are supposed to be followed by a hob tap for finishing the thread. Die taps are provided with a long chamfered portion, and a short straight or parallel part *E*, as shown in the engraving on page 12. A short guide *F* is also provided at the end of the thread. Die taps are relieved on both the top and in the angle of the thread for the full length of the chamfered portion, and are threaded on a taper for a short distance from the point of the tap, the same as machine taps. [MACHINERY, March, 1907, Hobs and Die Taps.]

Dimensions of Hob Taps

Dimensions of Sellers hobs are given on pages 14 and 15. These are intended only for the final finishing or sizing of dies, and are not relieved either on the top or in the angle of the thread. Two, or at most, three threads, however, are chamfered at the point of the threaded portion of the hob, these chamfered threads being relieved on the top of the thread the same as ordinary hand taps. Sellers hobs are fluted with double-angle cutters of 50 degrees inclusive angle. Extending from the point of the thread there is a plain guide of length *B*. The diameter of this guide or pilot is given in the table in accordance with the general practice of prominent manufacturers. Regular hob taps may be made according to the same dimensions as ordinary hand taps. (See pages 4 and 5.) The number of flutes, however, in these should be the same as the number of flutes in Sellers hobs and they should be fluted with the same kind of cutters. [MACHINERY, March, 1907, Hobs and Die Taps.]

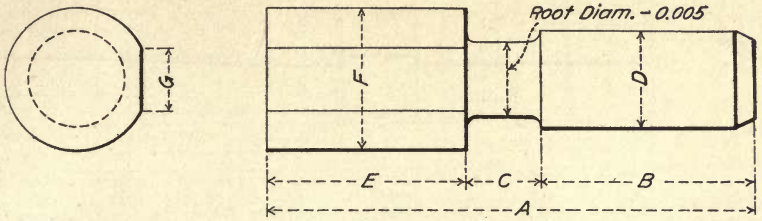
Dimensions of Screw Machine Taps

Screw machine taps, as the name indicates, are used for tapping in screw machines. It is difficult to establish a standard for this kind of taps as in many cases the length of the thread, the length of the chamfer, and the diameter of the shank, depend largely upon special conditions. When manufactured in quantities, however, whether for shop use or for the market, it is necessary to establish a standard

(Continued on page 23.)

DIMENSIONS OF SCREW MACHINE TAPS

Screw Machine Taps.



Diameter of Tap	Total Length	Length of Thread	Length of Neck	Length of Shank	Diameter of Shank	Width of Flat	Number of Flutes
D	A	B	C	E	F	G	
1/4	2 5/8	1 1/16	3/8	1 3/16	1/2	1/4	4
5/16	2 11/16	1 1/16	7/16	1 3/16	3/4	5/16	4
3/8	2 11/16	1 1/16	7/16	1 3/16	3/4	5/16	4
7/16	2 13/16	1 1/8	7/16	1 1/4	1	3/8	4
1/2	2 13/16	1 1/8	7/16	1 1/4	1	3/8	4
9/16	2 13/16	1 1/8	7/16	1 1/4	1 1/4	7/16	4
5/8	2 13/16	1 1/8	7/16	1 1/4	1 1/4	7/16	4
11/16	2 15/16	1 3/16	7/16	1 5/16	1 1/4	7/16	4
3/4	2 15/16	1 3/16	7/16	1 5/16	1 1/4	7/16	4
13/16	3	1 3/16	1/2	1 5/16	1 5/8	1/2	4
7/8	3	1 3/16	1/2	1 5/16	1 5/8	1/2	4
15/16	3 1/8	1 1/4	1/2	1 3/8	1 5/8	1/2	4
1	3 1/8	1 1/4	1/2	1 3/8	1 5/8	1/2	4
1 1/8	3 1/8	1 1/4	1/2	1 3/8	2	5/8	4
1 1/4	3 1/4	1 5/16	1/2	1 7/16	2	5/8	4
1 3/8	3 5/16	1 5/16	9/16	1 7/16	2 1/2	3/4	4
1 1/2	3 7/16	1 3/8	9/16	1 1/2	2 1/2	3/4	4
1 5/8	3 7/16	1 3/8	9/16	1 1/2	2 1/2	3/4	6
1 3/4	3 9/16	1 7/16	9/16	1 9/16	3 1/4	15/16	6
1 7/8	3 5/8	1 7/16	5/8	1 9/16	3 1/4	15/16	6
2	3 3/4	1 1/2	5/8	1 5/8	3 1/4	15/16	6

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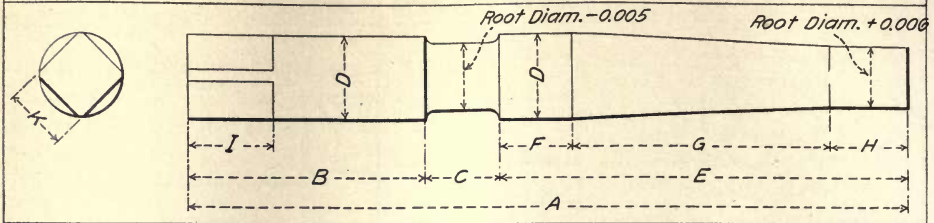
DIMENSIONS OF STRAIGHT BOILER TAPS

Straight Boiler Taps.



Diameter of Tap	Total Length	Length of Shank	Length of Neck	Length of Thread	Length of Full Thread	Length of Chamfer	Length of Pilot	Length of Square	Size of Square	Number of Flutes
D	A	B	C	E	F	G	H	I	K	
1/2	4 1/4	1 3/4	1/2	2	1/2	1 1/8	3/8	1/2	3/8	4
9/16	4 7/16	1 13/16	1/2	2 1/8	9/16	1 3/16	3/8	9/16	7/16	4
5/8	4 5/8	1 13/16	1/2	2 5/16	5/8	1 1/4	7/16	5/8	15/32	4
11/16	4 13/16	1 13/16	9/16	2 7/16	11/16	1 5/16	7/16	11/16	1/2	4
3/4	5	1 7/8	9/16	2 9/16	3/4	1 5/16	1/2	3/4	9/16	4
13/16	5 3/16	1 15/16	9/16	2 11/16	13/16	1 3/8	1/2	13/16	5/8	4
7/8	5 3/8	2	9/16	2 13/16	7/8	1 7/16	1/2	7/8	11/16	4
15/16	5 9/16	2	5/8	2 15/16	15/16	1 1/2	1/2	15/16	11/16	4
1	5 3/4	2	5/8	3 1/8	1	1 9/16	9/16	1	3/4	4
1 1/16	5 15/16	2 1/16	5/8	3 1/4	1 1/16	1 5/8	9/16	1 1/16	13/16	4
1 1/8	6 1/8	2 1/16	5/8	3 7/16	1 1/8	1 11/16	5/8	1 1/8	7/8	4
1 3/16	6 5/16	2 1/16	11/16	3 9/16	1 3/16	1 3/4	5/8	1 3/16	7/8	4
1 1/4	6 1/2	2 1/8	11/16	3 11/16	1 1/4	1 3/4	11/16	1 1/4	15/16	4
1 5/16	6 11/16	2 3/16	11/16	3 13/16	1 5/16	1 13/16	11/16	1 5/16	1	4
1 3/8	6 7/8	2 1/4	11/16	3 15/16	1 3/8	1 7/8	11/16	1 3/8	1 1/16	4
1 7/16	7 1/16	2 1/4	11/16	4 1/8	1 7/16	1 15/16	3/4	1 7/16	1 1/16	4
1 1/2	7 1/4	2 1/4	3/4	4 1/4	1 1/2	2	3/4	1 1/2	1 1/8	4
1 5/8	7 5/8	2 5/16	3/4	4 9/16	1 5/8	2 1/8	13/16	1 1/2	1 1/4	5
1 3/4	8	2 3/8	13/16	4 13/16	1 3/4	2 3/16	7/8	1 1/2	1 5/16	5
1 7/8	8 3/8	2 1/2	13/16	5 1/16	1 7/8	2 5/16	7/8	1 1/2	1 7/16	5
2	8 3/4	2 1/2	7/8	5 3/8	2	2 7/16	15/16	1 1/2	1 1/2	5

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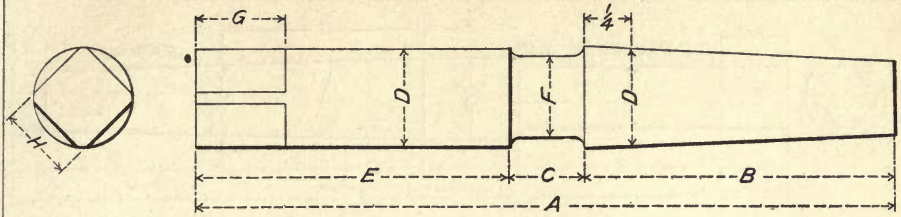
DIMENSIONS OF TAPER BOILER TAPS

Taper Boiler Taps.



Diameter of Tap	Total Length	Length of Thread	Length of Neck	Length of Shank	Diameter of Neck	Length of Square	Size of Square	Number of Flutes
D	A	B	C	E	F	G	H	
1/2	4 1/4	2 1/4	1/2	1 1/2	11/32	1/2	3/8	4
9/16	4 7/16	2 5/16	1/2	1 5/8	13/32	9/16	7/16	4
5/8	4 5/8	2 3/8	1/2	1 3/4	15/32	5/8	15/32	4
11/16	4 13/16	2 3/8	9/16	1 7/8	17/32	11/16	1/2	4
3/4	5	2 7/16	9/16	2	19/32	3/4	9/16	4
13/16	5 3/16	2 1/2	9/16	2 1/8	21/32	13/16	5/8	4
7/8	5 3/8	2 9/16	9/16	2 1/4	23/32	7/8	11/16	4
15/16	5 9/16	2 9/16	5/8	2 3/8	25/32	15/16	11/16	4
1	5 3/4	2 5/8	5/8	2 1/2	27/32	1	3/4	4
1 1/16	5 15/16	2 11/16	5/8	2 5/8	29/32	1 1/16	13/16	4
1 1/8	6 1/8	2 3/4	5/8	2 3/4	31/32	1 1/8	7/8	4
1 3/16	6 5/16	2 3/4	11/16	2 7/8	1 1/32	1 3/16	7/8	4
1 1/4	6 1/2	2 13/16	11/16	3	1 3/32	1 1/4	15/16	4
1 5/16	6 11/16	2 7/8	11/16	3 1/8	1 5/32	1 5/16	1	4
1 3/8	6 7/8	2 15/16	11/16	3 1/4	1 7/32	1 3/8	1 1/16	4
1 7/16	7 1/16	2 15/16	3/4	3 3/8	1 9/32	1 7/16	1 1/16	4
1 1/2	7 1/4	3	3/4	3 1/2	1 11/32	1 1/2	1 1/8	4
1 5/8	7 5/8	3 1/8	3/4	3 3/4	1 15/32	1 1/2	1 1/4	5
1 3/4	8	3 3/16	13/16	4	1 19/32	1 1/2	1 5/16	5
1 7/8	8 3/8	3 5/16	13/16	4 1/4	1 23/32	1 1/2	1 7/16	5
2	8 3/4	3 3/8	7/8	4 1/2	1 27/32	1 1/2	1 1/2	5

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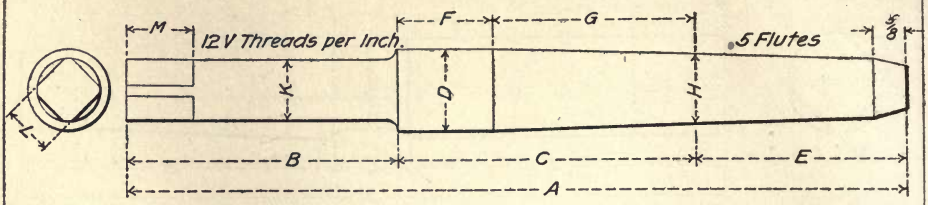
DIMENSIONS OF RADIAL STAY-BOLT TAPS

Stay-Bolt Taps.



Total Length of Tap	Diameter of Tap	Length of Shank	Length of Thread	Length of Reamer	Length of Parallel Thread	Length of Chamfer	Root Diameter	Diameter of Shank	Size of Square	Length of Square
A	D	B	C	E	F	G	H	K	L	M
20 Inches	3/4	7	7 1/2	5 1/2	1 1/2	6	0.606	0.601	15/32	3/4
	13/16	7	7 1/2	5 1/2	1 1/2	6	0.668	0.663	1/2	3/4
	7/8	7	7 1/2	5 1/2	1 1/2	6	0.731	0.726	9/16	3/4
	15/16	7	7 1/2	5 1/2	1 1/2	6	0.793	0.788	19/32	3/4
	1	7	7 1/2	5 1/2	1 1/2	6	0.856	0.851	21/32	1
	1 1/16	7	7 1/2	5 1/2	1 1/2	6	0.918	0.913	11/16	1
	1 1/8	7	7 1/2	5 1/2	1 1/2	6	0.981	0.976	3/4	1
	1 3/16	7	7 1/2	5 1/2	1 1/2	6	1.043	1.038	25/32	1
	1 1/4	7	7 1/2	5 1/2	1 1/2	6	1.106	1.101	27/32	1 1/4
	1 5/16	7	7 1/2	5 1/2	1 1/2	6	1.168	1.163	7/8	1 1/4
	1 3/8	7	7 1/2	5 1/2	1 1/2	6	1.231	1.226	15/16	1 1/4
24 Inches	3/4	9	8	7	2	6	0.606	0.601	15/32	3/4
	13/16	9	8	7	2	6	0.668	0.663	1/2	3/4
	7/8	9	8	7	2	6	0.731	0.726	9/16	3/4
	15/16	9	8	7	2	6	0.793	0.788	19/32	3/4
	1	9	8	7	2	6	0.856	0.851	21/32	1
	1 1/16	9	8	7	2	6	0.918	0.913	11/16	1
	1 1/8	9	8	7	2	6	0.981	0.976	3/4	1
	1 3/16	9	8	7	2	6	1.043	1.038	25/32	1
	1 1/4	9	8	7	2	6	1.106	1.101	27/32	1 1/4
	1 5/16	9	8	7	2	6	1.168	1.163	7/8	1 1/4
	1 3/8	9	8	7	2	6	1.231	1.226	15/16	1 1/4

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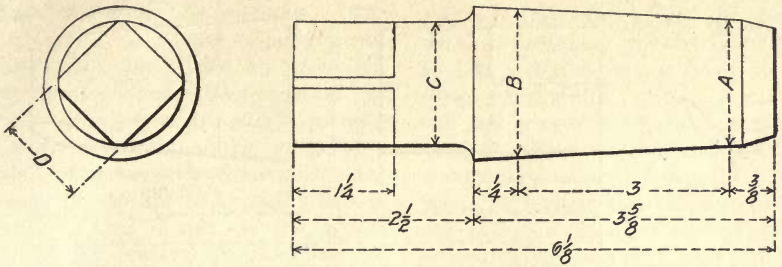
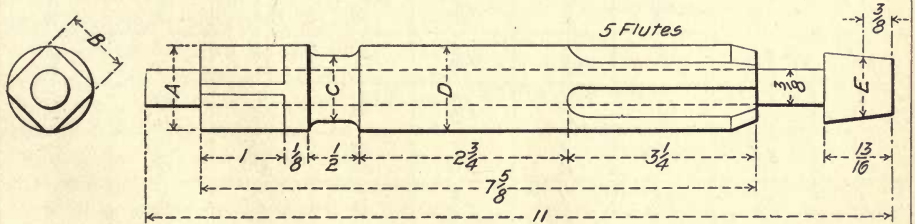
DIMENSIONS OF WASHOUT, AND SPINDLE STAY-BOLT TAPS

Mud or Washout Taps.



Number of Tap	Diam. at Small End	Diam. at Large End	Diam. of Shank	Size of Square	Number of Flutes	Number of Tap	Diam. at Small End	Diam. at Large End	Diam. of Shank	Size of Square	Number of Flutes
	A	B	C	D			A	B	C	D	
0	1 7/16	1 3/4	1 1/2	1 1/8	5	3	2 3/8	2 11/16	2	1 1/2	8
1	1 3/4	2 1/16	1 7/8	1 3/8	6	4	2 11/16	3	2	1 1/2	8
2	2 1/16	2 3/8	2	1 1/2	7	5	3	3 5/16	2	1 1/2	8

Spindle Stay Bolt Taps.



Diameter of Tap	Diameter of Shank	Size of Square	Diameter of Neck	Diameter of Guide	Diameter of Tap	Diameter of Shank	Size of Square	Diameter of Neck	Diameter of Guide
D	A	B	C	E	D	A	B	C	E
3/4	1	3/4	0.601	5/8	1 1/8	1 3/16	7/8	0.976	1
13/16	1	3/4	0.663	11/16	1 3/16	1 1/4	15/16	1.038	1 1/16
7/8	1	3/4	0.726	3/4	1 1/4	1 5/16	1	1.101	1 1/8
15/16	1	3/4	0.788	13/16	1 5/16	1 3/8	1 1/16	1.163	1 3/16
1	1 1/16	13/16	0.851	7/8	1 3/8	1 7/16	1 1/16	1.226	1 1/4
1 1/16	1 1/8	7/8	0.913	15/16	1 1/2	1 9/16	1 3/16	1.351	1 3/8

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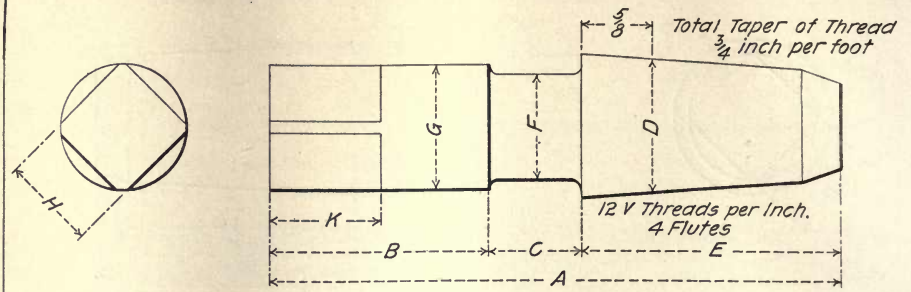
DIMENSIONS OF PATCH-BOLT TAPS

Patch Bolt Taps.



Diameter of Tap	Total Length	Length of Shank	Length of Neck	Length of Thread	Diameter of Neck	Diameter of Shank	Size of Square	Length of Square
D	A	B	C	E	F	G	H	K
1/2	2 7/8	1 1/8	1/2	1 1/4	3/8	1/2	3/8	1/2
9/16	3	1 3/16	1/2	1 5/16	7/16	9/16	7/16	1/2
5/8	3 1/16	1 1/4	1/2	1 5/16	1/2	5/8	15/32	9/16
11/16	3 1/8	1 5/16	1/2	1 5/16	9/16	11/16	1/2	9/16
3/4	3 3/16	1 3/8	1/2	1 5/16	5/8	3/4	9/16	5/8
13/16	3 1/4	1 7/16	1/2	1 5/16	11/16	13/16	5/8	5/8
7/8	3 3/8	1 1/2	1/2	1 3/8	3/4	7/8	21/32	11/16
15/16	3 7/16	1 9/16	1/2	1 3/8	13/16	15/16	11/16	11/16
1	3 1/2	1 5/8	1/2	1 3/8	7/8	1	3/4	3/4
1 1/16	3 9/16	1 11/16	1/2	1 3/8	15/16	1 1/16	13/16	3/4
1 1/8	3 5/8	1 3/4	1/2	1 3/8	1	1 1/8	27/32	13/16
1 3/16	3 3/4	1 13/16	1/2	1 7/16	1 1/16	1 3/16	7/8	13/16
1 1/4	3 13/16	1 7/8	1/2	1 7/16	1 1/8	1 1/4	15/16	7/8
1 5/16	3 7/8	1 15/16	1/2	1 7/16	1 3/16	1 5/16	1	7/8
1 3/8	3 15/16	2	1/2	1 7/16	1 1/4	1 3/8	1 1/32	15/16
1 7/16	4	2 1/16	1/2	1 7/16	1 5/16	1 7/16	1 1/16	15/16
1 1/2	4 1/16	2 1/8	1/2	1 7/16	1 3/8	1 1/2	1 1/8	1

Contributed by Erik Oberg, MACHINERY'S Data Sheet No. 98. Explanatory note: Page 23.

which will be correct in most cases. The chamfer on the end of the thread should be very short, and the thread is relieved only on the top of the thread of this chamfered portion. The straight portion should not be relieved. The shank should be ground true with the thread, and a flat milled on it for the turret binding screws. Dimensions for screw machine taps are given on page 17. Manufacturers making a specialty of this class of taps recommend that the diameter of the shank be made to correspond to the outside of the spring screw die for cutting the same size of thread as the screw machine tap is intended for. For this reason the diameter *F* of the shank is in all cases very much larger than the diameter *B* of the tap.

Dimensions of Boiler Taps

Dimensions of straight and taper boiler taps are given on pages 18 and 19. These taps are used especially in locomotive practice. The straight boiler tap has the same root diameter for the full length of the thread *E*, but on the top of the thread it is straight only for a distance *F*, while the distance *G* is tapered on the top of the thread, and the distance *H* is a straight pilot or guide. The taper boiler tap is tapered both on the top and at the root of the thread for the full length of the thread *B*, and is therefore properly called a taper tap. The taper is ¾ inch per foot. As will be noted, the diameter of this latter tap is measured ¼ of an inch from the large end of the thread. Only the chamfered portion on the straight boiler tap is relieved on the top of the thread, while in the case of the taper boiler tap it is necessary to relieve the tap both on the top and in the angle of the thread for the full length of the threaded portion, the same as in the case of all taper taps. Boiler taps are always provided with 12 sharp V-threads per inch, irrespective of the diameter of the tap. [MACHINERY, March and April, 1908, Taper Taps; July, 1908, Special and Adjustable Taps.]

Dimensions of Stay-bolt Taps

Stay-bolt taps, as the name indicates, are used for tapping the holes for stay-bolts in locomotive boiler work. Dimensions for the ordinary or radial stay-bolt tap are given on page 20, while dimensions for the spindle stay-bolt tap, which has derived its name from the guiding spindle upon which the tap proper revolves, are given on page 21. The radial stay-bolt taps are commonly made with a total length of 20 or 24 inches, and the dimensions in the table on page 20 have been given accordingly. Stay-bolt taps are usually made with 12 threads per inch of the sharp V-form. The Whitworth thread, however, is receiving considerable attention at the present time for use on stay bolts, and is regarded with favor by certain builders of large experience, notably by the Baldwin Locomotive Works. The thread on stay-bolt taps should be relieved both on the top and in the angle of the thread on the chamfered portion *G*, and about one-half of the chamfered portion is threaded with a taper in the bottom of the thread. [MACHINERY, March, 1902, Hardening Extra Long Stay-bolt Taps; July, 1908, Special and Adjustable Taps.]

Dimensions of Mud or Washout Taps

Mud or washout taps are used in steam boiler work and are employed the same as taper boiler taps, where a steam-tight fit is required. These taps are sometimes referred to as arch pipe taps, but the name mud or washout taps is by far the most common. These taps are usually made in six sizes, known by numbers, dimensions for which are given on page 21. The taper is 1¼ inch per foot, and the taps are provided with 12 V-threads per inch. [MACHINERY, April, 1908, Taper Taps.]

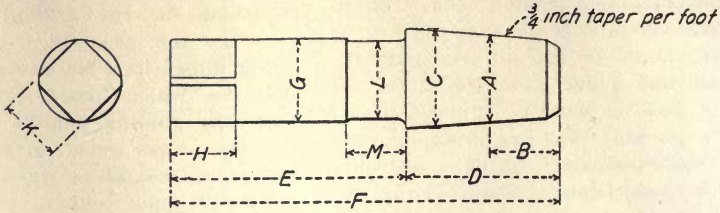
Dimensions of Patch-bolt Taps

Patch bolt taps are practically only a modified form of taper boiler taps, but the length of the thread and the total

(Continued on page 28.)

DIMENSIONS OF BRIGGS STANDARD PIPE TAPS

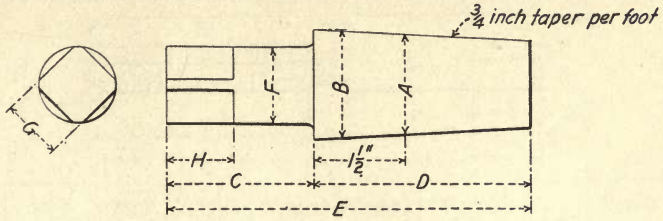
Briggs Standard Pipe Taps



Nominal Pipe Size	Diam. at Size Line A	Distance from End to Size Line B	Diam. at Large End C	Length of Thread D	Length of Shank E	Total Length F	Diam. of Shank G	Length of Square H	Size of Square K	Diam. of Neck L	Length of Neck M	Number of Flutes
1/8	0.405	25/64	0.443	1	1 5/8	2 5/8	7/16	9/16	5/16	3/8	3/8	4
1/4	0.540	9/16	0.575	1 1/8	1 3/4	2 7/8	17/32	9/16	3/8	15/32	3/8	4
3/8	0.675	9/16	0.718	1 1/4	1 7/8	3 1/8	9/16	5/8	7/16	These sizes have no neck	These sizes have no neck	4
1/2	0.840	3/4	0.887	1 1/2	2	3 1/2	3/4	11/16	9/16			4
3/4	1.050	3/4	1.104	1 5/8	2 1/4	3 7/8	15/16	3/4	11/16			5
1	1.315	15/16	1.366	1 3/4	2 1/2	4 1/4	1 1/8	13/16	13/16			5
1 1/4	1.660	31/32	1.717	1 7/8	2 3/4	4 5/8	1 5/16	15/16	1			6
1 1/2	1.900	1	1.963	2	3	5	1 1/2	1	1 1/8			6
2	2.375	1	2.453	2 1/4	3 1/2	5 3/4	1 7/8	1 3/16	1 3/8			7
2 1/2	2.875	1 1/2	2.961	2 7/8	4	6 7/8	2 1/4	1 3/8	1 11/16			8
3	3.500	1 9/16	3.605	3 1/4	4 1/2	7 3/4	2 5/8	1 1/2	1 15/16			9
3 1/2	4.000	1 5/8	4.125	3 5/8	4 9/16	8 3/16	2 13/16	1 9/16	2 1/8			10
4	4.500	1 11/16	4.629	3 3/4	4 5/8	8 3/8	3	1 5/8	2 1/4			11
4 1/2	5.000	1 7/8	5.125	3 7/8	4 11/16	8 9/16	3 3/16	1 11/16	2 3/8			12
5	5.563	2	5.687	4	4 3/4	8 3/4	3 3/8	1 3/4	2 1/2			13
6	6.625	2 1/4	6.766	4 1/2	4 7/8	9 3/8	3 3/4	1 7/8	2 13/16			15
7	7.625	2 3/8	7.773	4 3/4	5	9 3/4	4 1/8	2	3 1/16			16
8	8.625	2 3/8	8.773	4 3/4	5 1/8	9 7/8	4 1/2	2 1/8	3 3/8			18
9	9.625	2 1/2	9.781	5	5 1/4	10 1/4	4 7/8	2 1/4	3 5/8			20
10	10.750	2 1/2	10.906	5	5 3/8	10 3/8	5 1/4	2 3/8	3 15/16			22

DIMENSIONS OF PIPE HOBS

Pipe Hobs.

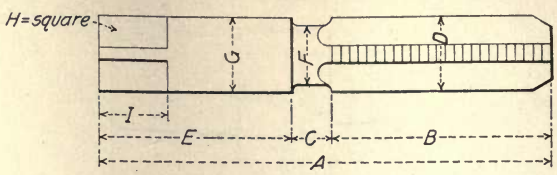


Nominal Size	Actual Size	Diameter at Large End	Length of Shank	Length of Thread	Length Over All	Diameter of Shank	Size of Square	Length of Square	Number of Flutes
	A	B	C	D	E	F	G	H	
1/8	0.445	0.539	2	3 3/16	5 3/16	3/8	5/16	1/2	5
1/4	0.573	0.667	2	3 3/8	5 3/8	1/2	3/8	5/8	6
3/8	0.719	0.813	2 1/16	3 1/2	5 9/16	5/8	7/16	3/4	6
1/2	0.885	0.979	2 1/16	3 5/8	5 11/16	13/16	5/8	7/8	8
3/4	1.104	1.198	2 1/8	3 7/8	6	1 1/16	13/16	1	10
1	1.363	1.457	2 1/8	4	6 1/8	1 5/16	1	1 1/8	12
1 1/4	1.721	1.815	2 3/16	4 1/8	6 5/16	1 5/8	1 1/4	1 1/4	16
1 1/2	1.955	2.049	2 3/16	4 1/4	6 7/16	1 7/8	1 7/16	1 3/8	18
2	2.460	2.554	2 1/4	4 1/2	6 3/4	2 3/8	1 13/16	1 1/2	22
2 1/2	2.963	3.057	2 5/16	4 11/16	7	2 7/8	2 3/16	1 5/8	26
3	3.620	3.714	2 3/8	4 7/8	7 1/4	3 9/16	2 5/8	1 3/4	32
3 1/2	4.062	4.156	2 7/16	5 1/16	7 1/2	3 11/16	2 13/16	1 3/4	36
4	4.485	4.579	2 1/2	5 1/4	7 3/4	3 3/4	2 13/16	1 7/8	40
4 1/2	5.000	5.094	2 9/16	5 3/8	7 15/16	3 13/16	2 7/8	1 7/8	44
5	5.565	5.659	2 5/8	5 1/2	8 1/8	3 7/8	2 15/16	2	48
6	6.620	6.714	2 3/4	5 3/4	8 1/2	4	3	2	58

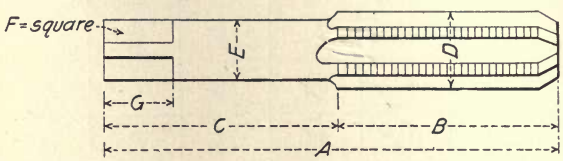
Contributed by Erik Oberg, MACHINERY'S Data Sheet No. 119. Explanatory note: Page 28.

DIMENSIONS OF STANDARD STRAIGHT PIPE TAPS

Standard Straight Pipe Taps.



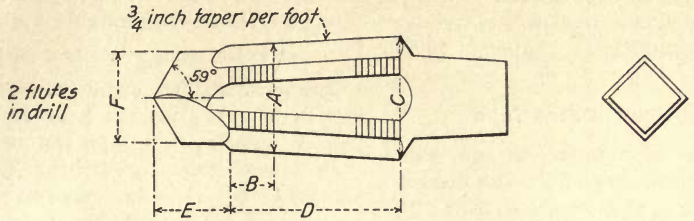
Nominal Size	Diam. of Tap	Total Length	Length of Thread	Length of Neck	Length of Shank	Diam. of Neck	Diam. of Shank	Size of Square	Length of Square	Number of Flutes
	D	A	B	C	E	F	G	H	I	
1/8	0.398	2 5/8	1	5/16	1 5/16	0.335	3/8	9/32	7/16	4
1/4	0.531	2 7/8	1 1/8	3/8	1 3/8	0.440	1/2	3/8	1/2	4
3/8	0.672	3 1/16	1 1/4	3/8	1 7/16	0.575	5/8	15/32	9/16	4
1/2	0.828	3 1/4	1 3/8	7/16	1 7/16	0.705	3/4	9/16	5/8	4
3/4	1.041	3 5/8	1 5/8	1/2	1 1/2	0.915	1	3/4	3/4	5



Nominal Size	Diam. of Tap	Total Length	Length of Thread	Length of Shank	Diam of Shank	Size of Square	Length of Square	Number of Flutes
	D	A	B	C	E	F	G	
1	1.293	4	1 3/4	2 1/4	1 1/8	13/16	13/16	5
1 1/4	1.645	4 7/16	1 15/16	2 1/2	1 1/4	15/16	15/16	6
1 1/2	1.880	4 7/8	2 1/8	2 3/4	1 3/8	1 1/16	1	6
2	2.359	5 11/16	2 7/16	3 1/4	1 5/8	1 1/4	1 3/16	7
2 1/2	2.836	6 1/2	2 3/4	3 3/4	1 7/8	1 7/16	1 5/16	7
3	3.461	7 3/8	3 1/8	4 1/4	2 1/8	1 5/8	1 1/2	8
3 1/2	3.971	8 3/16	3 7/16	4 3/4	2 3/8	1 13/16	1 11/16	8
4	4.398	9	3 3/4	5 1/4	2 5/8	1 15/16	1 13/16	10

DIMENSIONS OF PIPE TAPS AND DRILLS COMBINED

Pipe Taps and Drills Combined.



Nominal Pipe Size	Diameter at Size Line	Distance from end to Size Line	Diameter at Large End	Length of Thread	Length of Drill Point	Diameter of Drill	Number of Flutes in Tap
	A	B	C	D	E	F	
1/8	0.405	25/64	0.443	1	7/8	11/32	4
1/4	0.540	9/16	0.575	1 1/8	1	7/16	4
3/8	0.675	9/16	0.718	1 1/4	1 1/8	37/64	4
1/2	0.840	3/4	0.887	1 1/2	1 1/4	45/64	4
3/4"	1.050	3/4	1.104	1 5/8	1 3/8	29/32	5
1	1.315	15/16	1 366	1 3/4	1 1/2	1 9/64	5
1 1/4	1.660	31/32	1.717	1 7/8	1 5/8	1 1/2	6
1 1/2	1.900	1	1.963	2	1 3/4	1 23/32	6
2	2.375	1	2 453	2 1/4	1 7/8	2 3/16	7
2 1/2	2.875	1 1/2	2.961	2 7/8	2	2 5/8	8

length is made shorter than the corresponding lengths of boiler taps. The size of the tap is measured $\frac{5}{8}$ inch from the large end of the thread. Dimensions for patch-bolt taps are given on page 22. [MACHINERY, April, 1908, Taper Taps.]

Dimensions of Pipe Taps

Dimensions of regular Briggs pipe taps are given on page 24. The dimension *A*, given at a distance *B* from the end of the tap, is the essential diametral measure of a taper pipe tap, and the circular line which may be imagined to be drawn around the tap at this point is termed the "size line." Pipe taps are not known by the size measured at the size line, however, but by the nominal size of the pipe for which they are intended. Pipe taps, like all other taper taps, must, of course, be relieved both on the top and in the angle of the thread for the full length of the threaded portion. [MACHINERY, March, 1908, Taper Taps.]

Dimensions of Pipe Hobs

On page 25 are given dimensions of pipe hobs. These are used for sizing pipe dies after the thread has been cut nearly to size either in a lathe or by a regular pipe tap. The flutes are cut with a 50-degree double-angle cutter with a 25-degree angle on each side, which is the same kind of a cutter as is used for ordinary straight hob taps. Pipe hobs must be relieved both in the angle and on the top of the thread. In this respect they differ from straight hobs which are relieved only on the top of the thread of the chamfer at the point. [MACHINERY, April, 1908, Taper Taps.]

Dimensions of Straight Pipe Taps

Dimensions of straight pipe taps are given on page 26. These taps are merely a variation of hand taps, but have the same number of threads per inch as corresponding sizes of taper pipe taps, and a diameter arbitrarily adopted by the manufacturers of these taps, corresponding, of course, nearly to the diameter at the size line of Briggs standard taper pipe taps. These taps are relieved only on the top of the thread of the chamfered portion. [MACHINERY, July, 1908, Special and Adjustable Taps.]

Combined Pipe Taps and Drills

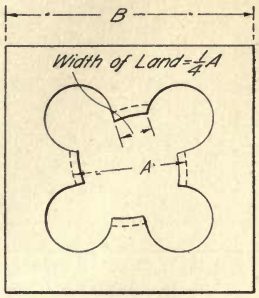
Dimensions for combined pipe taps and drills are given on page 27. This tool is practically a pipe tap provided with a drill point for drilling the hole previous to tapping. Instead of a square for a wrench, these taps are usually provided with a square taper shank for a taper drill socket. The dimensions of this shank, must, of course, be made to suit the drill socket, and can, therefore, not be given in a general table. The threaded portion is an exact duplicate of the threaded part of a pipe tap, while the drill part has two flutes, the same as a twist drill. [MACHINERY, April, 1908, Taper Taps.]

Dimensions of Solid Square Threading Dies

Dimensions of solid square threading dies are given on page 29. Solid dies are used to a great extent for general bolt threading, either in cases where a correct size is not essential, or where a finishing cut with an adjustable die will be taken after the solid roughing die has cut the thread nearly to size. It is also used for pipe dies, in which case the thread evidently must be tapered. A taper thread die, in order to cut a smooth and correct thread, requires to be relieved in the angle of the thread, but as the difficulties for relieving an internal thread like that of a pipe die are very great, it is not customary to do so. Pipe dies, therefore, cannot be used for cutting the threads of taps, but can only be used for rough work on pipes and similar softer metals, where a perfect thread is not essential. Solid square dies are always provided with four lands, except when very large. The center of the clearance holes should be located a trifle outside of the circle which measures the diameter of the screw to be cut. In very large dies it

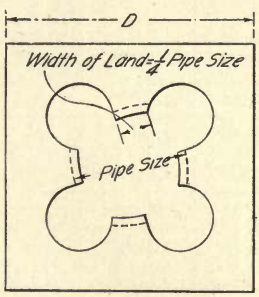
(Continued on page 34.)

SOLID SQUARE AND ROUND ADJUSTABLE DIES



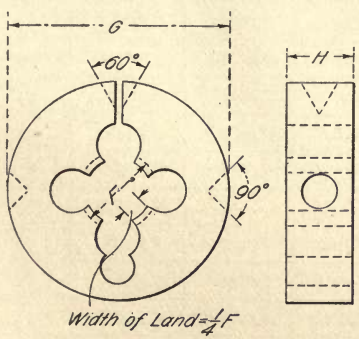
Dimensions of Solid Square Bolt Dies

Diameter of Thread A	Size of Square B	Thickness C	Diameter of Thread A	Size of Square B	Thickness C
1/4	2 1/2	1/2	7/8	2 1/2	3/4
5/16	2 1/2	1/2	1	2 1/2	1
3/8	2 1/2	1/2	1 1/8	2 1/2	1
7/16	2 1/2	1/2	1 1/4	2 1/2	1
1/2	2 1/2	3/4	1 3/8	2 1/2	1
9/16	2 1/2	3/4	1 1/2	3	1
5/8	2 1/2	3/4	1 5/8	3	1
11/16	2 1/2	3/4	1 3/4	3	1 1/4
3/4	2 1/2	3/4	1 7/8	3 1/2	1 1/2
13/16	2 1/2	3/4	2	3 3/4	2



Dimensions of Solid Square Pipe Dies

Nominal Pipe Size	Size of Square D	Thickness E	Nominal Pipe Size	Size of Square D	Thickness E
1/8	2	1/2	1	3	3/4
1/4	2	1/2	1 1/4	3	3/4
3/8	2	1/2	1 1/4	4	1
3/8	2 1/2	3/4	1 1/2	4	1
1/2	2 1/2	3/4	2	4	1
3/4	2 1/2	3/4	2 1/2	5	1 1/4
3/4	3	3/4	3	5	1 1/4

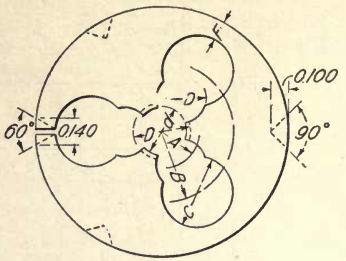


Dimensions of Round Split Adjustable Dies

Diameter of Thread F	Outside Diameter of Die G	Thickness H	Diameter of Thread F	Outside Diameter of Die G	Thickness H
1/16	13/16	1/4	1/2	2	5/8
1/8	13/16	1/4	9/16	2	5/8
3/16	13/16	1/4	5/8	2	5/8
1/4	13/16	1/4	11/16	2	5/8
3/16	1	3/8	3/4	2	5/8
1/4	1	3/8	11/16	2 1/2	11/16
5/16	1	3/8	3/4	2 1/2	11/16
3/8	1	3/8	13/16	2 1/2	11/16
7/16	1	3/8	7/8	2 1/2	11/16
3/8	1 1/2	1/2	1	2 1/2	11/16
7/16	1 1/2	1/2	1 1/8	2 1/2	11/16
1/2	1 1/2	1/2	1 1/4	2 1/2	11/16

Explanatory notes: Pages 28 and 34.

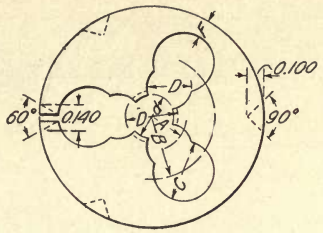
DIES FOR A. S. M. E. STANDARD MACHINE SCREWS



Outside Diameter of Basic Screw and Threads per inch D	Max Root Diameter of Basic Screw d	A	Outside Diameter of Die Blank	B	C	Thickness of Die Blank	F
0.060–80	0.0438	0.0432	13/16	0.1853	0.2543	0.2187	3/32
0.073–72	0.0550	0.0529	13/16	0.1918	0.2414	0.2187	3/32
0.086–64	0.0657	0.0626	13/16	0.1983	0.2284	0.2187	3/32
0.099–56	0.0758	0.0721	13/16	0.2046	0.2157	0.2187	3/32
0.112–48	0.0849	0.0814	13/16	0.2109	0.2031	0.2187	3/32
0.125–44	0.0955	0.0910	13/16	0.2174	0.1902	0.2187	3/32
0.138–40	0.1055	0.1005	13/16	0.2237	0.1775	0.2187	3/32
0.151–36	0.1149	0.1098	13/16	0.2301	0.1649	0.2187	3/32
0.164–36	0.1279	0.1199	1.000	0.1898	0.2453	0.2500	3/32
0.177–32	0.1364	0.1291	1.000	0.1961	0.2328	0.2500	3/32
0.190–30	0.1467	0.1386	1.000	0.2024	0.2201	0.2500	3/32
0.216–28	0.1696	0.1582	1.000	0.2155	0.1940	0.2500	3/32
0.242–24	0.1879	0.1767	1.000	0.3217	0.1690	0.2500	3/32
0.268–22	0.2090	0.1961	1.000	0.3347	0.1431	0.2500	3/32
0.294–20	0.2290	0.2150	1.000	0.3474	0.1177	0.2500	3/32
0.320–20	0.2550	0.2351	1.000	——	——	0.2500	——
0.346–18	0.2738	0.2538	1.250	0.4308	0.2009	0.3125	3/32
0.372–16	0.2908	0.2722	1.250	0.4482	0.1660	0.3125	3/32
0.398–16	0.3168	0.2832	1.250	0.4570	0.1485	0.3125	3/32
0.424–14	0.3312	0.2902	1.250	0.4637	0.1350	0.3125	3/32
0.450–14	0.3572	0.2938	1.250	0.4686	0.1249	0.3125	3/32

Contributed by Thomas J. Norton and Douglas T. Hamilton. Explanatory note: Page 34.

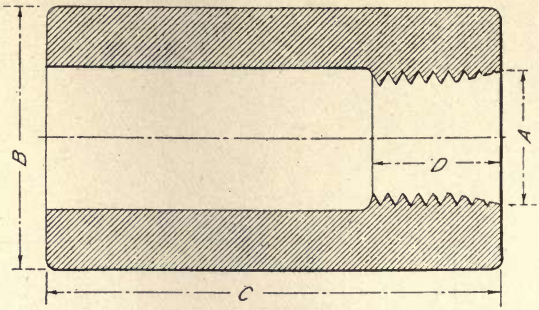
DIES FOR A. S. M. E. SPECIAL MACHINE SCREWS



Outside Diameter of Basic Screw and Threads per inch D	Max. Root Diameter of Basic Screw d	A	Outside Diameter of Die Blank	B	C	Thickness of Die Blank	F
0.073–64	0.0527	0.0527	13/16	0.1917	0.2417	0.2187	3/32
0.086–56	0.0628	0.0620	13/16	0.1980	0.2290	0.2187	3/32
0.099–48	0.0719	0.0713	13/16	0.2043	0.2165	0.2187	3/32
0.112 –40	0.0795	0.0803	13/16	0.2104	0.2042	0.2187	3/32
–36	0.0759	0.0794	13/16	0.2100	0.2051	0.2187	3/32
0.125–40	0.0925	0.0903	13/16	0.2170	0.1910	0.2187	3/32
–36	0.0889	0.0896	13/16	0.2167	0.1917	0.2187	3/32
0.138–36	0.1019	0.0997	13/16	0.2234	0.1783	0.2187	3/32
–32	0.0974	0.0987	13/16	0.2229	0.1793	0.2187	3/32
0.151 –32	0.1104	0.1089	13/16	0.2296	0.1659	0.2187	3/32
–30	0.1077	0.1083	1.000	0.2761	0.2602	0.250	3/32
0.164–32	0.1234	0.1190	1.000	0.2831	0.2462	0.250	3/32
–30	0.1207	0.1184	1.000	0.2828	0.2468	0.250	3/32
0.177–30	0.1337	0.1285	1.000	0.2895	0.2335	0.250	3/32
–24	0.1229	0.1262	1.000	0.2863	0.2358	0.250	3/32
0.190–32	0.1494	0.1391	1.000	0.2964	0.2196	0.250	3/32
–24	0.1359	0.1364	1.000	0.2951	0.2223	0.250	3/32
0.216–24	0.1619	0.1565	1.000	0.3084	0.1957	0.250	3/32
0.242–20	0.1770	0.1745	1.000	0.3206	0.1712	0.250	3/32
0.268–20	0.2030	0.1947	1.000	0.3340	0.1445	0.250	3/32
0.294–18	0.2218	0.2134	1.000	0.3466	0.1193	0.250	3/32
0.320–18	0.2478	0.2337	1.000	0.3600	0.0925	0.250	3/32
0.346–16	0.2648	0.2519	1.250	0.4348	0.1928	0.3125	3/32
0.372–18	0.2998	0.2740	1.250	0.4491	0.1642	0.3125	3/32
0.398–14	0.3052	0.2903	1.250	0.4605	0.1414	0.3125	3/32
0.424–16	0.3428	0.2916	1.250	0.4649	0.1336	0.3125	3/32
0.450–16	0.3688	0.2942	1.250	0.4690	0.1245	0.3125	3/32

Contributed by Thomas J. Norton and Douglas T. Hamilton. Explanatory note: Page 34.

SPRING SCREW THREADING DIES



Diameter of Cut A	Outside Diameter B	Length C	Diameter of Cut A	Outside Diameter B	Length C
1/8	1/2	1 1/4	3/4	1 3/8	2 1/2
3/16	1/2	1 1/4	3/4	2	3
1/4	1/2	1 1/4	7/8	2	3
1/4	3/4	1 3/4	1	2	3
5/16	3/4	1 3/4	1 1/8	2	3
3/8	3/4	1 3/4	1 1/4	2	3
3/8	1	2	1 1/8	2 1/2	3 1/2
7/16	1	2	1 1/4	2 1/2	3 1/2
1/2	1	2	1 1/2	2 1/2	3 1/2
1/2	1 3/8	2 1/2	1 3/4	3 1/4	4
9/16	1 3/8	2 1/2	2	3 1/4	4
5/8	1 3/8	2 1/2	2 1/4	3 1/4	4

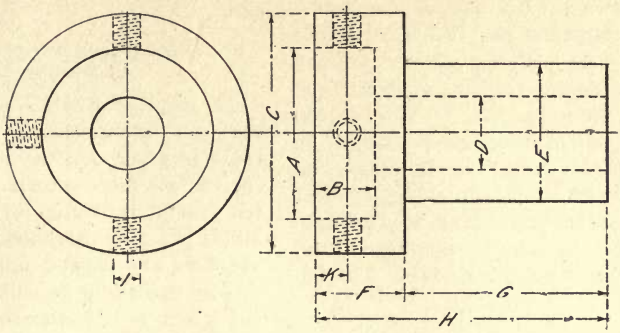
Length of Thread For Various Pitches

No. of Threads per inch	Length of Thread D	No of Threads per inch	Length of Thread D	No of Threads per inch	Length of Thread D
40	3/16	16	7/16	8	7/8
36	7/32	14	1/2	7	1
32	1/4	13	9/16	6	1 3/16
28	9/32	12	5/8	5 1/2	1 5/16
24	5/16	11	11/16	5	1 7/16
20	3/8	10	3/4	4 1/2	1 9/16
18	13/32	9	13/16		

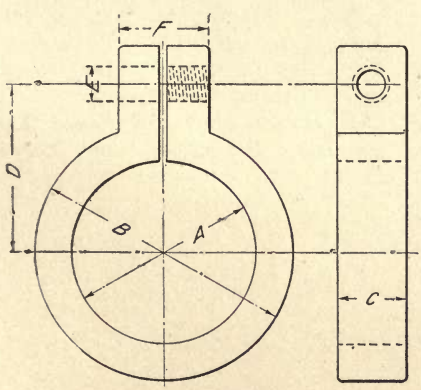
Explanatory note: Page 34.

DIE HOLDERS AND CLAMP COLLARS

Dimensions of Die Holders For Use In Ordinary Lathe



Diameter of Recess	Depth of Recess	Outside Diameter	Diameter of Hole in Shank	Diameter of Shank	Length of Body	Length of Shank	Total Length	Size of Screws	Location of Screws
A	B	C	D	E	F	G	H	I	K
0.632	1/4	1	3/16	1/2	3/8	3/4	1 1/8	5/32	0.135
0.821	1/4	1 1/4	7/16	7/8	3/8	3/4	1 1/8	3/16	0.135
1.009	3/8	1 1/2	9/16	1	9/16	1 1/8	1 11/16	7/32	0.197
1.511	1/2	2 3/16	13/16	1 3/8	3/4	1 1/2	2 1/4	1/4	0.260
2.013	5/8	2 7/8	1 1/16	1 3/4	15/16	1 7/8	2 13/16	5/16	0.322
2.515	11/16	3 9/16	1 3/8	2 1/8	1	2 1/16	3 1/16	3/8	0.354



Dimensions of Clamp Collars For Spring Screw Threading Dies

A	B	C	D	E	F
1/2	3/4	5/16	13/32	5/32	7/16
3/4	1 1/16	3/8	9/16	3/16	1/2
1	1 3/8	7/16	23/32	1/4	5/8
1 3/8	1 13/16	9/16	31/32	5/16	3/4
2	2 5/8	11/16	1 3/8	7/16	1
2 1/2	3 1/4	13/16	1 5/8	1/2	1 3/16

Explanatory note: Page 34.

is not possible to make circular clearance holes, as these would be required to be of too large a diameter in order to make the lands of correct width. In such cases two clearance holes are drilled between each two of the lands, the metal between the two holes being removed. The chamfer on the top of the thread should extend for about 3 or 4 threads from the end or side of the die. The top of the thread should be relieved on the chamfered threads. The dimensions given in the table of solid square dies are according to the general dimensions used by manufacturers. [MACHINERY, September, 1908, Threading Dies.]

Dimensions of Round Split Adjustable Dies

Dimensions of round split adjustable dies of ordinary construction are given on page 29. These dies are usually round and provided with a countersink at the place where the die is split for the adjusting screw, and also with one countersink on each side of the die for the binding screws which close up the die so that it bears against the point of the adjusting screw when ready for use. The center of the clearance holes should be located a trifle outside of the circle which measures the diameter of the thread to be cut, the same as in solid dies.

Dimensions for adjustable dies for cutting the A. S. M. E. standard and special machine screw threads are given on pages 30 and 31. In this case complete dimensions are given for the clearance holes, this being possible because both the outside diameter and the number of threads are given in each case and thus nothing need be left to the judgment of the maker. [MACHINERY, September, 1908, Threading Dies; March, 1909, Formulas for Machine Screw Button or Split Dies.]

Dimensions of Spring Screw Threading Dies

On page 32 dimensions are given of spring screw threading dies. A special table is given for the length of thread for various pitches or number of threads per inch, it being evident that the length of the threaded portion in the die does not depend upon the diameter of the thread to be cut but only upon the pitch of the thread; the finer the pitch the shorter the thread in the die. Dimensions for clamp collars for spring screw threading dies are given on page 33. On the same page a table for dimensions of the die holders for adjustable dies intended for use in ordinary lathe work are given. It will be noticed that in these die holders the center line of the binding screws does not fully coincide with the center of the die in the longitudinal direction, but that the screws are apparently located 0.010 inch too far in. This is for the purpose of forcing the dies solidly toward the bottom of the recess, the binding screws exerting a wedging action on the dies in the countersinks for the point of the screws. [MACHINERY, August, October, and November, 1906, Spring Screw Threading Dies; March, 1907, Roughing and Finishing Spring Screw Dies; June, 1906, Holder for Spring Screw Threading Dies; September, 1908, Threading Dies.]

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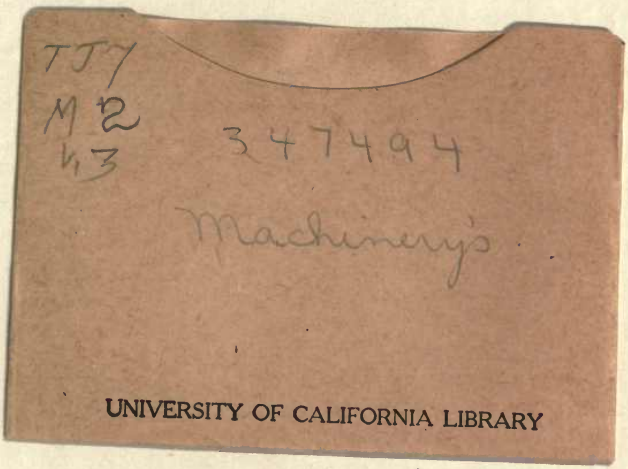
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